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CHUNG JU DAM

REPUBLIC OF KOR...

**INDUSTRIAL SITES AND WATER RESOURCES
DEVELOPMENT CORPORATION**

CHUNGJU MULTIPURPOSE PROJECT

MONTHLY PROGRESS REPORT

NO. 12
NOVEMBER 1976



ENGINEERING CONSULTANTS, INC.

DENVER, COLORADO, U. S. A. DAEJEON, KOREA.

REPUBLIC OF KOREA
INDUSTRIAL SITES AND WATER RESOURCES
DEVELOPMENT CORPORATION

THE CHUNGJU MULTIPURPOSE PROJECT

MONTHLY PROGRESS REPORT
NO. 12
FOR NOVEMBER 1976

SUBMITTED BY:
ENGINEERING CONSULTANTS, INC.

DENVER, COLORADO, U.S.A. DAEJEON, KOREA

ENGINEERING CONSULTANTS, INC.
P.O. Box 310
DAEJEON

December 3 , 1976

Mr. Kyung Mo Ahn
President
Industrial Sites and
Water Resources
Development Corporation

Our File: 1173/787
T788/76

Subject: Chungju Multipurpose Project
Monthly Report, November 1976

Dear Mr. Ahn:

We are submitting our twelfth monthly report which
covers the month of November 1976.

Very truly yours,

ENGINEERING CONSULTANTS, INC.


Louis E. Haley
Project Manager

Encl. Ten (10) copies.

cc: USAID/Korea, Five copies of enclosure.
ECI Denver, One copy of enclosure.
Saman, One copy of enclosure.

I. GENERAL

The engineering services contract was formally signed on November 13 and 14, 1975 and officially approved by USAID immediately thereafter. Mobilization of forces, procurement of visas and scheduling of work started immediately.

The consultant's office was established in conjunction with the Investigation Department of ISWACO in Daejeon. Counterpart staff have been selected by ISWACO and assigned to the Chungju Project.

A subcontract was negotiated and signed by the Consultant (ECI) and Saman Engineering Consultants Co. (SAMAN) of Seoul, Korea on December 17, 1975. The subcontract is for certain technical and nontechnical support services. The subcontract has been approved in principal by USAID and ISWACO subject to final approval by the Government. Saman has proceeded with mobilization and collection of data.

An interim report summarizing previous studies and ECI's studies during the first three months was prepared for submission to EPB/ISWACO.

The Interim Report was formally presented to the Investigations Division and then to President Ahn and the Directors of ISWACO.

The first supplemental agreement for the subcontract between ECI and Saman Engineering Consultants Co., was approved.

A Telex was installed in ISWACO on April 19, 1976. This greatly facilitates communication and reduces costs.

The draft feasibility report was submitted to ISWACO for review on July 30, 1976.

**Comments on the Draft Feasibility Report were received
from ISWACO on September 25, 1976.**

II. PERSONNEL

A. Present at last report

- | | |
|------------------|-----------------|
| 1. L.E. Haley | Project Manager |
| 2. R.B. Campbell | Design Engineer |
| 3. R.K. Sohr | Office Engineer |

B. Arrivals subsequent to last report

None

C. Scheduled to Arrive in December

None

D. Departures in November

- | | |
|------------------|-----------------|
| 1. R.B. Campbell | Design Engineer |
| 2. R.K. Sohr | Office Engineer |

E. Scheduled to Depart in December

None

F. Administrative Personnel

Park, Yong Suk and Moon, Hyeong Joo Saman draftsmen departed.

III. IMPORTANT EVENTS

<u>No.</u>	<u>Day of Month</u>	<u>Location</u>	<u>Purpose</u>	<u>Personnel</u>
1	6	Seoul	Conference with Saman on Access Road and Transmission Line	L.E. Haley R.K. Sohr R.B. Campbell
2	8,9	Seoul	Meeting with Saman, AID and Seoul National University	L.E. Haley
3	13	Seoul	Meeting with Saman Preparing to Depart Korea	L.E. Haley R.B. Campbell
4	14	Seoul	Depart Korea for U.S.A.	R.B. Campbell
5	17,18	Seoul	Meeting with USAID	L.E. Haley
6	26	Seoul	U.S. Embassy and Ministry of Justice	L.E. Haley
7	26	Seoul	Made preparations for final departure from Korea	R.K. Sohr
8	30		Last Working day in Korea	R.K. Soh

IV. PROBLEM AREAS

Because of the short period of time to complete the work, as described in the terms of reference, the items discussed or mentioned in this chapter are considered as "major" problems and are items that have or will affect the work progress. The items that we wish to bring forward at this time are:

The Economic Planning Board has been requested to amend the letter of credit to agree with the contract so that ECI can receive payment subject to later audit and adjustment. This amendment will accelerate regular payment by December 31, 1976. Even though the requested amendment may be approved there is still a problem of collecting the 10% retainage of the Fee, which depends upon ECI delivering all contract documents, ISWACO reviewing and approving the documents, ISWACO relaying such approval to EPB, EPB transmitting final invoice to ECI, ECI transmitting the approved invoice to the bank and the bank making payment within the loan terminal disbursement date. An early solution to this problem is requested.

At the present time it appears that the Terminal Disbursement Date of the loan will not be extended and therefore the letter of credit can not extend beyond loan. ECI recognized in February, 1976, that there were major discrepancies between the letter of credit and the terms and conditions of the contract which would create problems in receiving payment and release of the retainage fee. A continuing effort has been made since February 6, 1976, for amendment and/or extension without success.

In order to properly prepare, write, print, ship, receive and clear through Korean Customs an extension of three months is needed and has been requested. Two of the three months are for work after December 31, 1976, and one month for final invoicing and clearance.

V. PROGRESS

A. Korea

1. Completed and forwarded the draft technical specifications for the Wolsangri Reregulation Dam to Denver for editing and printing.
2. Prepared draft specifications for the access road. Transmitted the specifications and 55 drawings to Denver for final editing and printing.
3. The following drawings for the reregulation dam were completed and were transmitted to Denver for printing:

Reregulation Dam, Project Location Map
Reregulation Dam, Loading Gauge of Railway
Reregulation Dam, Vicinity Map
Reregulation Dam, Site Geology, Sheet 1 of 3
Reregulation Dam, Site Geology, Sheet 2 of 3
Reregulation Dam, Site Geology, Sheet 3 of 3
Reregulation Dam, Sources of Material
Reregulation Dam, Plan, Elevation and Sections
Reregulation Dam, Service Spillway, Plan,
Section and Details
Reregulation Dam, Spillway, Typical Reinforcement
Reregulation Dam, Earth Embankment Section
Right Abutment Retaining Wall, Concrete Outline
and Typical Reinforcement

4. Completed and transmitted to Denver for printing 6 drawings for transmission line, towers and conductor accessories.
5. Draft specifications for the transmission line and towers was completed and forwarded to Denver.
6. Computation of quantities for the reregulation dam were completed and were forwarded to ECI-Denver for printing.

7. A total of 71 drawings, that were prepared by ECI-Korea, were forwarded during the month to ECI-Denver for inclusion in the tender documents.

B. Denver

1. Reviewed and discussed project features with Mr. Choi, Sang Kee. Major computer programs that were used in connection with the Chungju Project were given to ISWACO through Mr. Choi while he was in Denver.
2. Prepared Travel Schedules and made arrangements for guided tours for Mr. Choi, Sang Kee to the United States Bureau of Reclamation, Tennessee Valley Authority Projects, U.S. Army Corps of Engineers Waterways Experiment Station and the General Automation Corporation Manufacturing plant.
3. Mr. Choi departed Denver for U.S. tour on November 21 and continued to Korea without returning to Denver.
4. Mr. Lee, Sang Man arrived in Denver on November 18 and was oriented on the project work status.
5. Arrangements were made for Mr. Lee to visit TVA projects on November 29 and 30.
6. Feasibility report review, correction, typing and printing was completed for dam crest elevation 152.50. This constitutes volumes 1 and 2 of feasibility report.
7. Carried out computer simulated flood routing studies to determine reservoir conservation elevation for dam crest elevation 150.5 and a flood pool volume of 600 MCM.
8. Carried out computer runs to determine increase in firm power with increased installed capacity.

9. Carried out computer simulated project operation studies to determine long term water yield and power output from first stage dam with crest elevation 150.5.
10. Evaluated project benefits, costs, B/C ratio and internal rate of return for first stage dam crest at 150.5.
11. Computed repayment schedules for power and domestic and irrigation water supplies.
12. Completed writing and typing of following chapter for addendum to feasibility report for first stage dam crest at 150.5.

- I. Introduction
- III. Design criteria
- IV. Project economics

13. Contract drawings for main dam spillway bridge and for reregulating dam equipment deck were completed.
14. Checking and correcting civil drawings for main dam and power plant continued.
15. Drafting of technical specifications for main dam and power plant continued. Final draft review was completed and typing started on volume 1 sections of specifications for main dam, power plant and reregulation dam.
16. Determination of construction activities for preparation of construction program was started.
17. River outlet in main dam was relocated to non-overflow section, block 8.

- '18. Reviewed crane requirements for removing stoplogs in flood spillway of reregulation dam and changed gating arrangement to use fixed wheel gates with individual hoists in all bays and one light gantry crane for handling stoplogs, thereby eliminating one crane and reducing the size of crane and deck beams.
19. Work continued on the following electrical drawing and specifications:
 - a. Switchyard
 - b. Station service and motor control
 - c. Generators and transformers
 - d. Power plant lighting
20. Work continued on all mechanical designs specifications.

C. Administrative

The following table and attached graphs (Appendix 3) portray the status of the Won account. As of November 30, 1976, 92.7 percent of the budgeted funds have been expended.

Budget Status - Local Currency Costs

Item	Budget	Actual to date	Balance
1. Salaries of Local Staff	7,201,400	5,671,668	1,529,732
2. Transportation Costs	4,729,890	2,923,302	1,806,588
3. Miscellaneous Local Costs	6,480,710	5,085,389	1,395,321
4. Per Diem			
a. Resident Staff	3,125,000	2,611,250	513,750
b. TDY & Consultants	8,125,000	7,688,750	436,250
5. Subsistence Allowance	10,338,000	9,262,000	1,076,000
6. Subcontract	98,500,000	95,129,500	3,370,500
Total	138,500,000	128,371,859	10,128,141

VI. PROGRAM NEXT PERIOD

Work on tender design and specifications to continue in Denver.

VII. APPENDICES

- 1. Arrivals and departures (ECI).**
- 2. Subcontract monthly report - Saman Engineering Consultants Co.**
- 3. Local currency costs.**

Appendix 1

ARRIVALS AND DEPARTURES - ECI

Name	Position	Arrived	Departed
1. M.M. Kuehl	Chief Engineer	11/27/75	12/5/75
2. W. Burke	Special Consultant	11/27/75	12/5/75
3. T.M. Leps	Special Consultant	11/27/75	12/5/75
4. C.D. Slaughter	Project Manager	11/30/75	12/18/75
5. C.M. Langford	Executive Vice President	1/5/76	1/14/76
6. P.L. Strauss	Chief Geologist	1/10/76	5/2/76
7. C.D. Slaughter	Project Manager	1/11/76	3/16/76
8. L.F. Haley	Project Manager	1/12/76	
9. W.W. Evett	Hydrology/Sediment	2/16/76	4/12/76
10. R.E. Struthers	Economist	2/21/76	3/12/76
11. Yin Au-Yeung	Hydrologist	2/22/76	3/20/76
12. A. Dahlberg	Project Engineer	2/27/76	3/16/76
13. M.M. Kuehl	Vice President/ Chief Engineer	3/9/76	3/16/76
14. T.M. Leps	Special Consultant	3/8/76	3/16/76
15. W. Burke	Special Consultant	3/9/76	3/16/76
16. R.K. Sohr	Office Engineer	3/9/76	11/30/76
17. C.M. Langford	Executive Vice President	3/20/76	3/25/76
18. J.G. Nemec	Irrigation & Drainage	3/11/76	4/8/76
19. G.J. Hoge	Irrigation & Planning Engineer	3/28/76	8/31/76
20. D.R. Workman	Mining Geologist	4/2/76	4/23/76
21. R.D. Goodrich	Power Systems Analyst	4/21/76	7/19/76
22. E.D. Churchill	Environmentalist	5/7/76	8/1/76
23. P.L. Strauss	Chief Geologist	5/16/76	7/15/76

Appendix 1
(continued)

Name	Position	Arrived	Departed
24. M.A. Stevens	River Morphologist	6/3/76	7/11/76
25. R.E. Struthers	Economist	6/7/76	7/19/76
26. G. Saunders	Water Law	6/20/76	7/2/76
27. A. Dahlberg	Project Engineer	6/22/76	7/20/76
28. C.M. Langford	Executive Vice President	8/14/76	8/21/76
29. M.E. Von Seggern	Special Consultant	8/14/76	8/23/76
30. P.L. Strauss	Geologist	8/18/76	8/22/76
31. R.E. Campbell	Design Engineer	9/16/76	11/14/76
32. G.E. Rockwell	President	10/17/76	10/23/76

**MONTHLY REPORT
ON
THE ENGINEERING SERVICES
FOR
THE CHUNGJU MULTIPURPOSE PROJECT**

NOV. 1976

SAMAN ENGINEERING CONSULTANTS CO.

I. DESCRIPTION OF PERFORMANCE

S-4.5.1. Field Investigation

- 1. Survey of Reservoir Area**
-Completed on June.
- 2. Geological Investigation**
-Completed on Oct.
- 3. Survey for Construction Materials**
-Completed on Aug.
- 4. Soil Survey and Land Classification**
-Completed on Sept.
- 5. Hydrological and Meteorological Field Measurements**
-2 Samples were finally collected at near of Moghang Bridge for water quality test
- 6. Investigation of M&I Water Demand**
-Completed on Aug.
- 7. Investigation of Agricultural Sector**
-Completed on June.
- 8. Flood Damage Survey**
-Completed on July

S-4.5.2 Supporting Engineering Services

-Access road drawings, specification and drawings for power transmission tower were completed on Nov.

S-4.5.3 Printing

-Total progress is 98% up to this period.

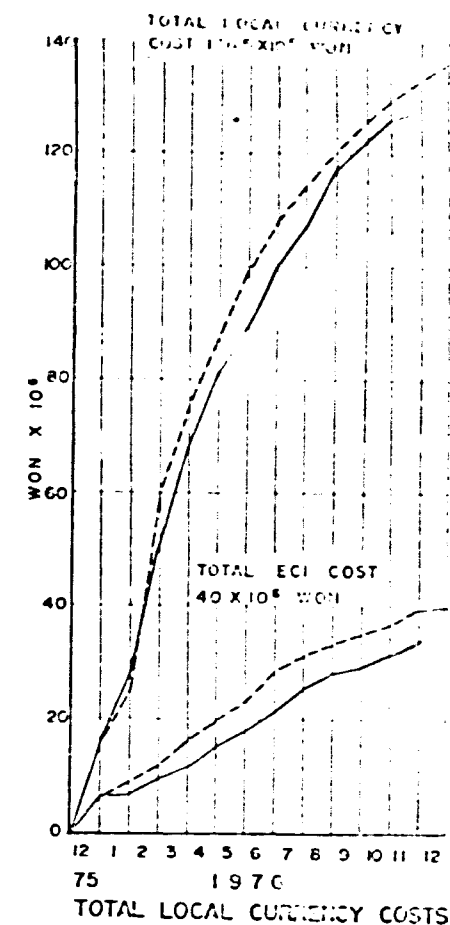
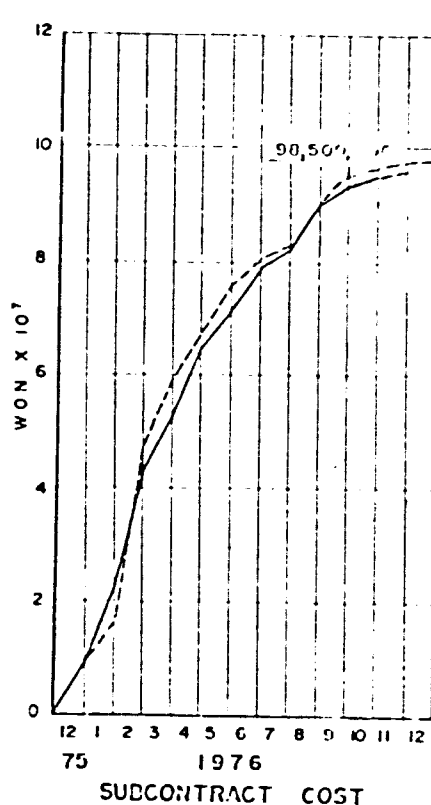
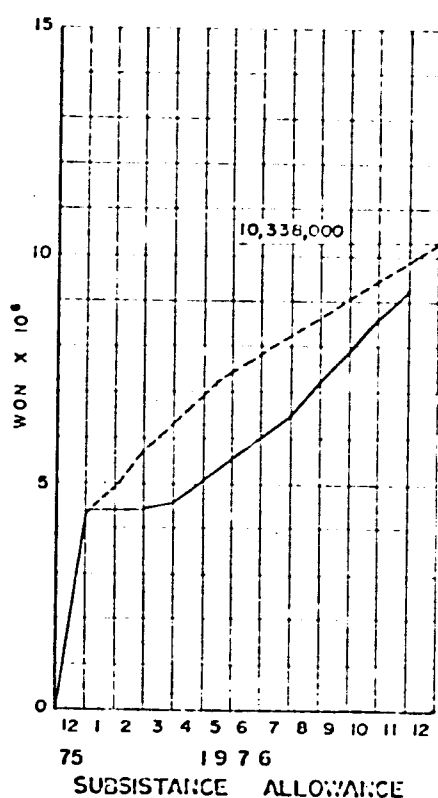
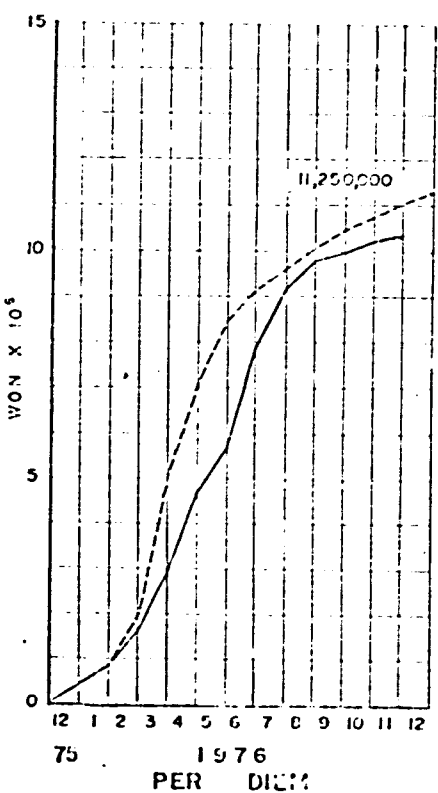
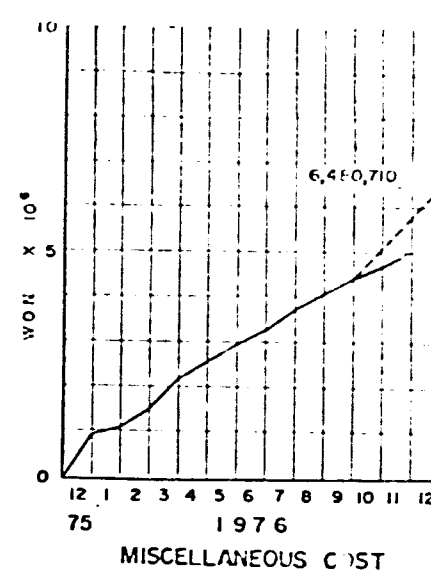
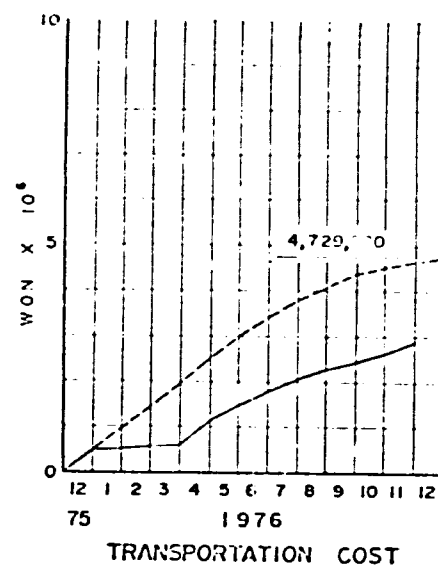
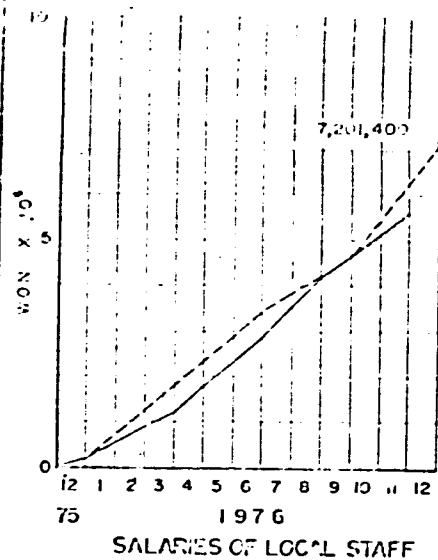
II. KEY EVENTS

1. Meetings

- Dr. Campbell visited Saman's office on Nov.5.**
- Dr. Haley visited Saman's office on Nov.9.**
- Dr. Haley and Dr. Campbell visited Saman's office on Nov.13.**
- Dr. Haley visited Saman's office on Nov.26.**

IV. WORK PROGRESS

Item		% of Contract	% of Completed	% of Completed
S-4.5.1	Field Investigation	83.97	95.8	80.49
1.	Survey of Reservoir Area	9.95	100.0	9.95
2.	Geological Investigation	35.93	90.3	32.45
3.	Survey for Const. Materials	6.74	100.0	6.74
4.	Soil Survey & Land Class.	7.74	100.0	7.74
5.	Hydro. & Meteo. Survey	1.11	100.0	1.11
6.	Investi. of M & I Demand	5.36	100.0	5.36
7.	Investi. of Agricul. Sector	9.40	100.0	9.40
8.	Flood Damage Survey	7.74	100.0	7.74
S-4.5.2	Supporting Engineering Services	13.27	98.3	13.05
S-4.5.3	Printing	2.76	98.0	2.70
Total		100.00		96.24



LEGEND

- CONTRACT ESTIMATED COSTS
- ACTUAL COSTS

APPENDIX No. 3

CHANGE NO. 2
ECONOMIC PLANNING BOARD AND
INDUSTRIAL SITES AND WATER RESOURCES
DEVELOPMENT CORP., THE REPUBLIC OF KOREA

CHUNGJU MULTIPURPOSE PROJECT

LOCAL CURRENCY COSTS

ENGINEERING CONSULTANTS - INC.
DAEJEON, KOREA

SUBMITTED

APPROVED

DATE

1173 -

UNITED STATES GOVERNMENT

2-Way Memo

Subject: AID Loan 489-H-083 - Monthly Progress Report
No. 12 (Chungju Multipurpose Project)

Pehl
Hahn

DATE OF MESSAGE
December 13, 1976
DATE OF REPLY
INSTRUCTIONS Use routing symbols whenever possible. SENDER: Forward original and one copy. Conserve space. RECEIVER: Reply below the message, keep one copy, return one copy.

To
→

Mr. M. M. Pehl
ASIA/PD
AID/W 20523

FOLD

USE BRIEF, INFORMAL LANGUAGE

FOLD

Three copies of subject report are attached for your information.

Attachment: A/S

Received. ZMHahn *ZH*

Edwin A. Gales *EG*
GDO-DL, USAID/Korea

STATE - A.I.D. - USIA ROUTING SLIP				DATE 12/23/76		
TO:	<div style="text-align: center; font-size: small;">Name or Title</div>	<div style="text-align: center; font-size: small;">Orgn. Symbol</div>	<div style="text-align: center; font-size: small;">Room No.</div>	<div style="text-align: center; font-size: small;">Bldg.</div>	<div style="text-align: center; font-size: small;">Initials</div>	<div style="text-align: center; font-size: small;">Date</div>
1.	RHellert-Beck, ASIA/EA/K					
2.	JSloan, SER/ENGR					
3.						
4.						
5.						

<input type="checkbox"/> Approval	<input type="checkbox"/> For Your Information	<input type="checkbox"/> Note and Return
<input type="checkbox"/> As Requested	<input type="checkbox"/> Initial for Clearance	<input type="checkbox"/> For Comment
<input type="checkbox"/> Comment	<input type="checkbox"/> Investigate	<input type="checkbox"/> Prepare Reply
<input type="checkbox"/> File	<input type="checkbox"/> Justify	<input type="checkbox"/> See Me
<input type="checkbox"/> For Correction	<input type="checkbox"/> Necessary Action	<input type="checkbox"/> Signature

REMARKS OR ADDITIONAL ROUTING

SUBJECT: KOREA -- 2nd Feasibility Studies
Loan No. 489-H-083
Monthly Progress Report No. 12

Attached for your information and records is one copy of the subject report for the month of November, 1976.

FROM: (Name and Org. Symbol) ZHahn, ASIA/PD	ROOM NO. & BLDG.	PHONE NO.
-------------------------------------------------------	-----------------------------	------------------